



PCT/GB 2003 / 0 0 2 8 9 4



INVESTOR IN PEOPLE

The Patent Office
Concept House
Cardiff Road

Newport
South Wales
NP10 8QQ

REGD 09 SEP 2003
WIPO

PCT

PRIORITY DOCUMENT
SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH
RULE 17.1(a) OR (b)

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

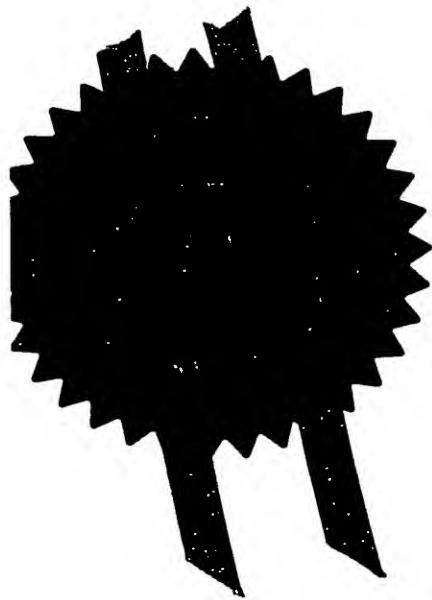
In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

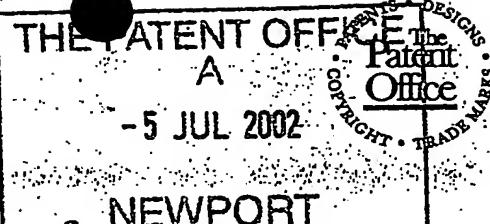
In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated 14 August 2003



05JUL02 E73110-1 C86975
P01/7700 0.00 0215528.1

The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

Request for grant of a patent
(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

1. Your reference

FOILPATENT.DOC

2. Patent application number

(The Patent Office will fill in this part)

0215528.1

- 5 JUL 2002

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

IAN NAYLOR.
 3 PENFOLD COURT
 HELLIFIELD
 SKIPTON

Patents ADP number *(if you know it)*

North Yorkshire

If the applicant is a corporate body, give the country/state of its incorporation

BD23 4LW

DAVID WALLER
 2 NOOK BARN
 55 CREEK LANE
 WILSDEN, BRADFORD
 WEST YORKSHIRE
 BD15 0AZ

8418550001

8418568001

4. Title of the invention

MULTIPLE TASK FOILING MACHINE

5. Name of your agent *(if you have one)*

"Address for service" in the United Kingdom
 to which all correspondence should be sent
(including the postcode)

N/A.

Patents ADP number *(if you know it)*6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country

Priority application number
*(if you know it)*Date of filing
(day / month / year)

N/A

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

N/A

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body.

See note (d)

N/A

9. Enter the number of sheets for any of the following items you are filing with this form. -
Do not count copies of the same document

Continuation sheets of this form

Description - 13

Claim(s) 1

Abstract 1

Drawing(s) 1 4 + 4

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

N/A

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents
(Please specify)

11.

If we request the grant of a patent on the basis of this application.

Signature

M. Waller

Date 4th July 20024th July 2002

12. Name and daytime telephone number of person to contact in the United Kingdom HOME 01729 851581. MOBILE 07730 922988 MOBILE 07831 874013 HOME 01535 271531

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.

1

DESCRIPTION

MULTIPLE TASK HOT FOIL PRESSING

The invention relates to a fully automatic, multiple sheet fed, hot foiling machine, with hydraulic press stations arranged in series for single pass, multiple task foiling, die cutting and embossing.

Background

Multiple hydraulic press stations have not previously been constructed, as a single machine unit, for multiple task linear foiling, die cutting and embossing, and with applications that can be produced in a single pass with sheet based products.

Essential Features

The design of the single pass, multiple task, hydraulic press machine, specifies a variable hydraulic pressure and a two-stage velocity / distance profile for the approach and pressing, at each hydraulic press station.

The number of press stations is optional.

The multiple hydraulic pressing cycles are synchronised with the product feed and traverse and the output of the product.

Each hydraulic press station is arranged as a single task part of a complete multiple task process.

The control logic for every machine function includes product position sensing and press position by transducers, and is essentially a dedicated pre-programmed electronic controller and a control console for setting the parameters.

The drawings are described as follows :-

1. A preferred general arrangement plan of a typical multiple press station machine is described with reference to drawing Figure 1.
2. A preferred front elevation of a typical multiple press station machine is described with reference to drawing Figure 2.
3. A preferred end elevation of a typical multiple press station alone is described with reference to drawing Figure 3.
4. A preferred plan of the machine product transfer is described with reference to drawing Figure 4.

1. A preferred general arrangement plan of a typical multiple press station machine is briefly described with reference to drawing Figure 1.

The overall machine arrangement is an interconnected assembly of a product sheet feeder, item 01, a number of press stations, items 02, (with three stations shown) a product handling system, item 03 and a product discharge conveyor, item 04. The hydraulic power pack, item 05, the electrical control cabinet, item 06 and the control console, item 07, represent those assemblies normally arranged with the machine.

The process pass is from item 01 to item 04 and the multiple task is the sum of pressings carried out at each press station, item 02.

2. A preferred front elevation of a typical multiple press station machine is briefly described with reference to drawing Figure 2.

A single press station, item 02, has a more detailed description with reference to drawing figure 3

The handling system, item 03, has a more detailed description with reference to drawing figure 4

The pre-cut product is manually stacked onto the feeder unit lift plate, item 08. In automatic mode the vertical stack is raised to the feed off position by means of lifting screw jacks, item 09, under servo motor and height sensor control. From this stack feed off position a horizontal array of vacuum pads, items 10, lift and arc the top single product sheet to the datum pick up point of the traverse handling unit.

The product sheets are automatically moved to and from the press stations, items 02, by the handling system, item 03, to be discharged onto the conveyor, item 04.

3. A preferred end elevation of a typical multiple press station alone is briefly described with reference to drawing Figure 3.

The servo motor driven, foil storage and feed unit, item 11, is mounted above the stationary upper press platen, item 12.

The foil strip is driven through the work area of the guided press platen, item 13. The guided press platen, item 13, is raised and lowered by the hydraulic cylinder, item 14 and the cylinder piston rod connects to the guided press platen, item 13. The hydraulic cylinder is mounted within the station base, item 15.

The foil press tooling dies are assembled at the setting tables, item 16 and relocated on the underside of the upper press platen, item 12.

The press stations have die alignment re-registering, item 17, which is the lateral and longitudinal (X and Y) re-alignment of the whole press station relative to the press centre.

4. A preferred plan of the machine product transfer is briefly described with reference to drawing Figure 4.

As the feeder unit vacuum pads, items 18, release the product sheet, then transverse gripper, item 23, takes control of traversing and then releasing the product sheet at the first position. This is in order to allow the edges of this sheet product to be datum'd in the X and Y direction, as viewed in plan (Figure 4). The traverse gripper, item 19, takes control thereafter and positions the sheet product at the first position press station by traversing left to right. The first station gripper, item 19, returns to the product sheet datum pick up point to repeat the handling action at timed pressing intervals. After the first station pressing the second press station is product fed from the first by the second station traverse gripper set, item 20. This grip, traverse and release handling system is repeated at subsequent press stations. The first product sheet is thereby traversed to and from every press station in turn.

All press operations are performed simultaneously until such time as the product reaches the last station and all the required processes have been performed to each sheet product. The grippers are moved by means of linear actuators, items 21, under servo motor control and product sheet position control. The finished product sheet is finally delivered onto the output conveyor by the output gripper set, item 22.

CLAIMS

What is claimed is :-

The automatic production of variant image hot foiled sheets using a multiple arrangement of press stations within one machine unit and providing the process means whereby bulk sheet product is automatically handled between the press stations is referred to as *single pass-multiple task foiling*.

The automatic machine process referred to as *single pass-multiple task foiling* in claim 1, is *individually tasked* at each press station providing the process means to add a variant image at every press station

The press station function referred to as *individually tasked* in claim 2 is produced by a self contained hydraulic press where the stroke control provides a two stage, approach and press, velocity / distance profile.

ABSTRACTMULTIPLE TASK HOT FOIL PRESSING -

Drawing Figure 1 to accompany the abstract.

A fully automatic, multiple press, hot foil pressing, die cutting and embossing machine is provided for pressing variant images onto multiple single product sheets in one pass.

The machine provides :-

A feeder unit, where a stack of pre-cut product sheets is automatically raised and aligned for transfer.

Multiple hydraulic press stations, having a double acting hydraulic cylinder under servo valve and stroke control. The moving platen automatically follows a pre-set velocity / distance profile. The press stations provide both base mounted, position registering for manual die alignment and outboard tables for assembling the dies.

Multiple horizontal single sheet handling assemblies, to automatically transfer in turn, multiple sheets as an array to all presses simultaneously.

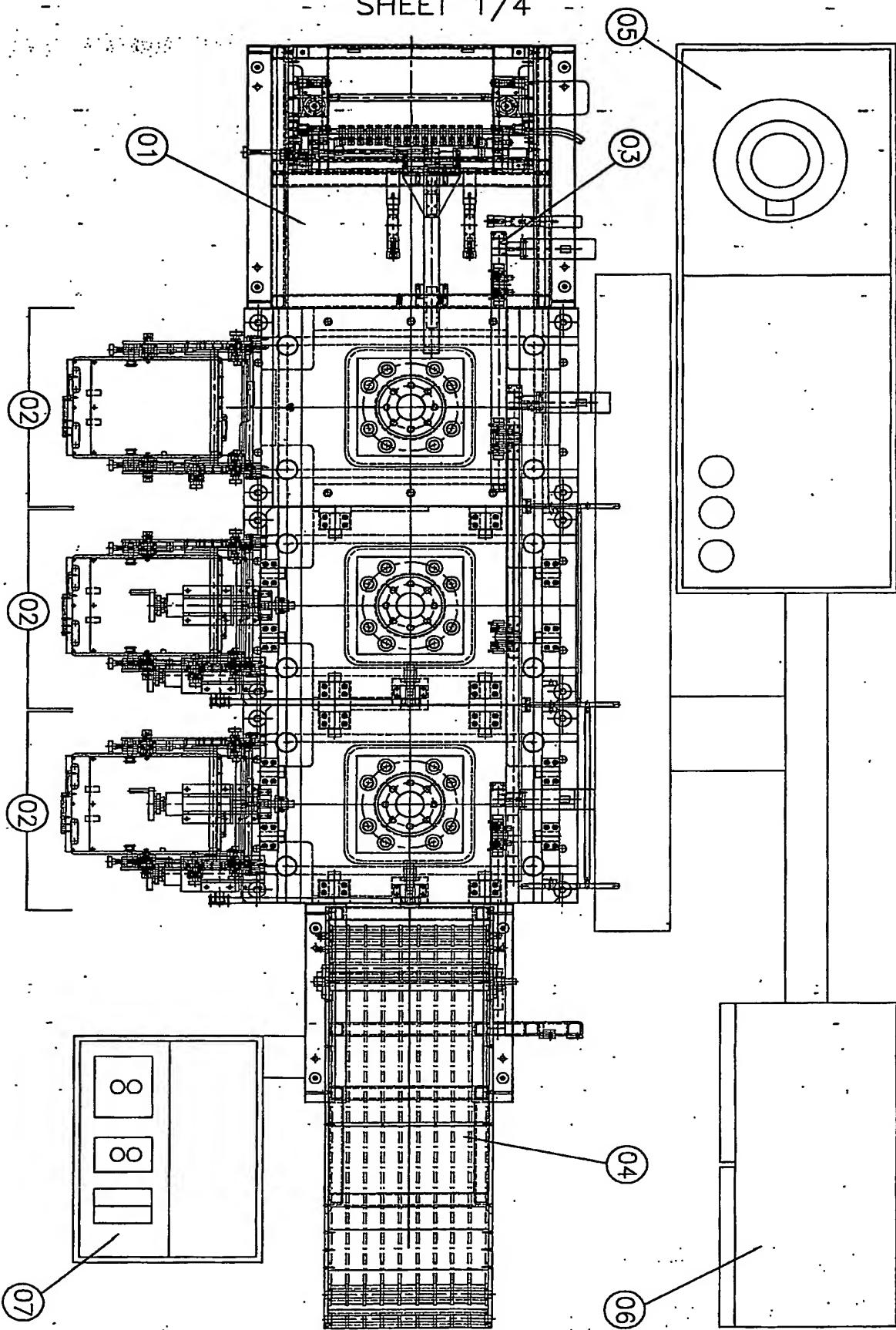
Multiple units for foil storage with auto feed unwind and waste rewind.

A finished product sheet output conveyor

A hydraulic reservoir and pump set, an electrical control panel, an operator control console and all interconnecting cables and pipe work.

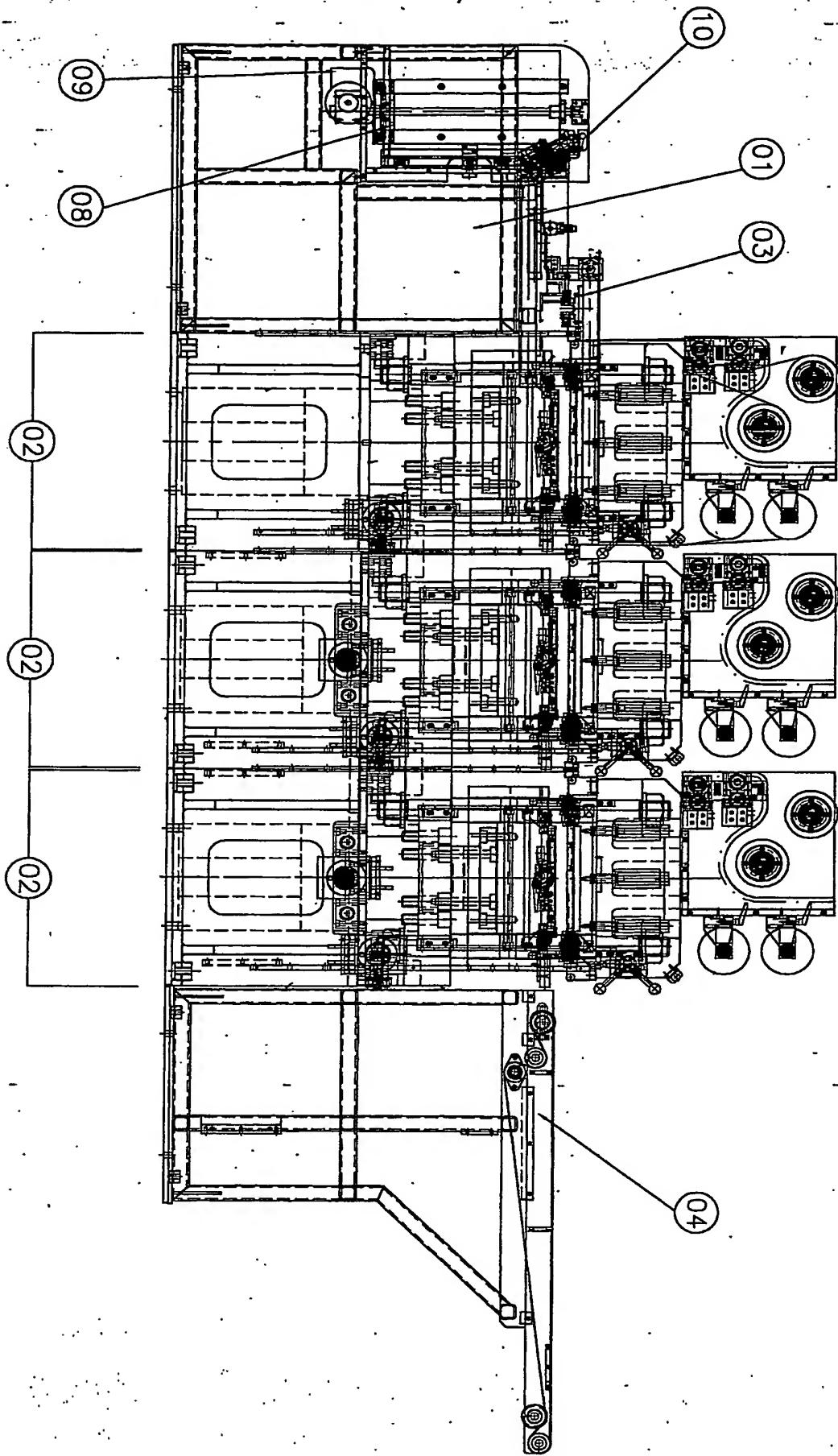
SHEET 1/4

FIGURE 1



SHEET 2/4

FIGURE 2



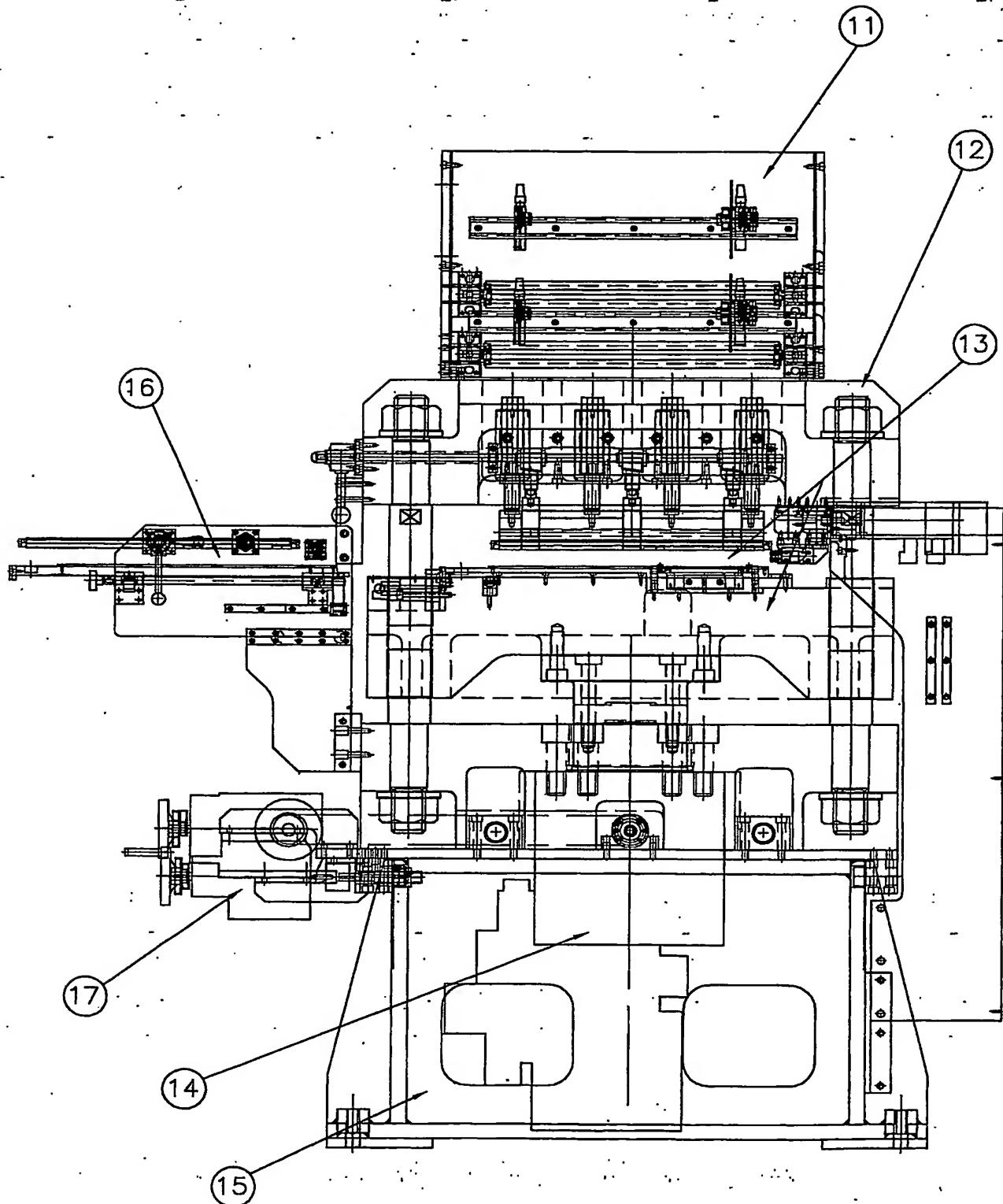


FIGURE 3

SHEET 4/4

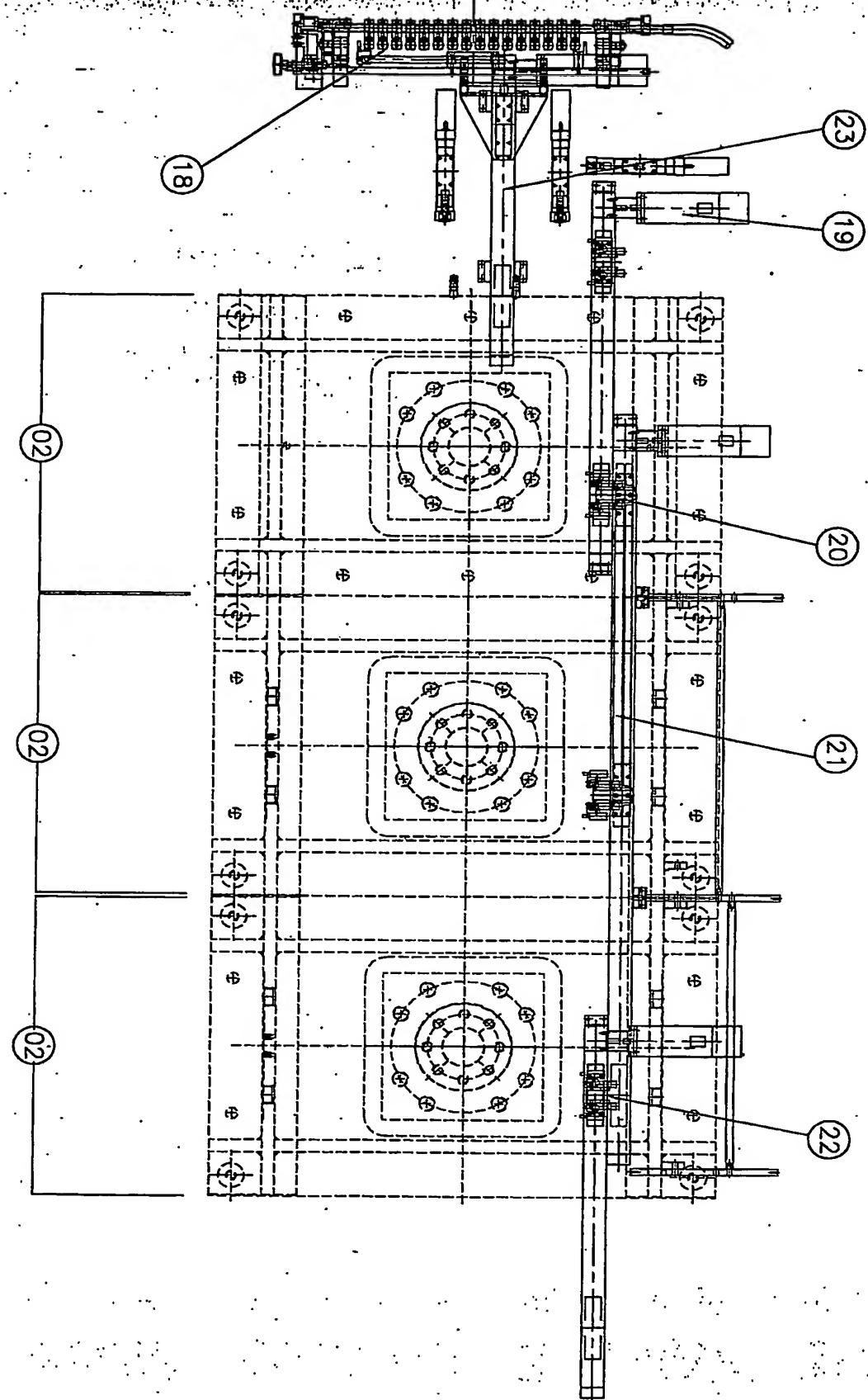


FIGURE 4

